IT314
Software Engineering
Lab 5

Name : Sojitra Kashyap Alpeshbhai
ID : 202001217
Grp : 19

1.

```python
import numpy as np
import random

def make_balanced(X,Y):
    "Binary label balancer function used for stutter-fluent binary classifier"
    try:
        # more fluent than stutter trials. choose randomly as much stutter trials from the fluent and concat.
        # np.where(Y_array==0) will give the indices where the array is 0 (fluent).
        # then using np.random.choice, we choose X_array[Y_array==1].shape[0] (stutter) number of samples from the fluent trials.
        # later we concatenate both data points to create a balanced dataset.
        random_data_points = np.random.choice(np.where(Y==0)[0], size=X[Y==1].shape[0], replace=False)
        assert random_data_points.shape[0] == X[Y==1].shape[0]
        random_data_points = np.concatenate((random_data_points, np.where(Y==1)[0]))
        random.shuffle(random_data_points)

    except ValueError:
        # more stutter than fluent trials. choose randomly as much fluent trials from the stutter and concat.
        random_data_points = np.random.choice(np.where(Y==1)[0], size=X[Y==0].shape[0], replace=False)
        assert random_data_points.shape[0] == X[Y==0].shape[0]
        random_data_points = np.concatenate((random_data_points, np.where(Y==0)[0]))
        random.shuffle(random_data_points)
    return(X[random_data_points], Y[random_data_points])
```

Failed (exit code: 1) (4015 ms)

```
main.py:1: error: Cannot find implementation or library stub for module named "numpy"  [import]
main.py:1: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
Found 1 error in 1 file (checked 1 source file)
```

As we can see in the error that we are importing the library but not using it through out the code so that it bad practice to do this kind of things during the coding so that memory can be utilized.

‘

2.

```
    def INITIAL_STATE(self):
        array= [ [[0,2,1],[3,4,5],[6,7,8]], [[1,2,3],[4,5,6],[0,7,8]], [[8,0,2],[4,3,1],[7,6,5]], [[1,2,0],[3,4,5],[6,7,8]], [[8,1,2],[4,3,5],[7,6,0]], [[5,6,7],[8,3,4],[1,2,0]] ]
#         array[4] result after 11 iterations (time 0:0:07.35, 1-11.6)
#         array[5] result after 15 iterations (time 0:4:57.39 ,1-15.4)
        #self.node=array[np.random.randint(0,6)]#for generating random index between 0 to 5 (but it changes every depth)
        self.node= array[4]
        print("\nStarting state is:",self.node)
        return self.node


# In[4]:


#creating starting board 8-puzzle
'''NOTE: But it can't be used due to unsolvable case might generate.'''
    def RandomArray()
    arr=np.zeros([3,3],dtype=int)
    for i in range(3):    #generate random 2D array of size 3x3 with one number repeated (form 1 to 8)
        for j in range(3):
            k=0;x=np.random.randint(1,9)
            while(x in arr and k<100):
                x=np.random.randint(1,9);k+=1
            arr[i][j]=x

       #for finding repeated number from that 2D array (It can't be done by predefined functions)
    for i in range(3): #creating dictionary for  keeping count
        for j in range(3):
            x=arr[i][j]
            dic[x]=0 if x not in dic else 1
```

Failed (exit code: 2) (1078 ms)

```
main.py:112: error: unexpected indent  [syntax]
Found 1 error in 1 file (errors prevented further checking)
```

There is an error showing that it is a syntax error because we have done some mistake in the defining the function by giving a tab which is error in the python.

3.

```
19  ##
20  ##
21  ## output: cost after convergence (rmse, lower the better)
22  ##
23  ##
24  ## NOTE: all required modules are imported. DO NOT import new modules.
25  ## NOTE: references are given intline
26  ## tested on Ubuntu14.04, 22Oct2017, Abhilash Srikantha
27  ################################################################################
28
29  import numpy as np
30  import matplotlib.pyplot as plt
31
32  def load_data(fname):
33      points = np.loadtxt(fname, delimiter=',')
34      y_ = points[:,1]
35      # append '1' to account for the intercept
36      x_ = np.ones([len(y_),2])
37      x_[:,0] = points[:,0]
38      # display plot
39      #plt.plot(x_[:,0], y_, 'ro')
40      #plt.xlabel('x-axis')
41      #plt.ylabel('y-axis')
42      #plt.show()
43      print('data loaded. x:{} y:{}'.format(x_.shape, y_.shape))
44      return x_, y_
45
46  def evaluate_cost(x_,y_,params):
47      tempcost = 0
```

Failed (exit code: 1) (3058 ms)

```
main.py:29: error: Cannot find implementation or library stub for module named "numpy"  [import]
main.py:30: error: Cannot find implementation or library stub for module named "matplotlib.pyplot"  [import]
main.py:30: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
main.py:30: error: Cannot find implementation or library stub for module named "matplotlib"  [import]
main.py:99: error: Name "time" is not defined  [name-defined]
main.py:99: error: Name "start" is not defined  [name-defined]
Found 5 errors in 1 file (checked 1 source file)
```

As seen in the screenshot we are not using libraries which are imported and there is an error for not defining the any variable but using the variable without defining it which is bad practice.

4.

```
1  # Author: OMKAR PATHAK
2
3
4
5  fadd = ''                                    # sender's email address
6  tadd = ''                                    # receiver's email address
7  msg = 'Mail sent through Python!'            # Message to be sent!
8  username = ''                                # Your username(email ID)
9  password = ''                                # Your password for above email ID
10 server = smtplib.SMTP('smtp.gmail.com',587)
11 server.ehlo()
12 server.starttls()
13 server.login(username,password)
14 server.sendmail(fadd,tadd,msg)
```

Failed (exit code: 1) (3234 ms)

```
main.py:10: error: Name "smtplib" is not defined  [name-defined]
Found 1 error in 1 file (checked 1 source file)
```

Here one library is not imported but it is used further in the code which gives an error.and other then that there is no error.

5.

```
27      gender = gender.lower()
28      married= married.lower()
29      education = education.lower()
30      employ = employ.lower()
31      proper = proper.lower()
32      error = 0
33      if(employ=='yes')
34          employ = 1
35      else:
36          employ = 0
37      if(gender=='male'):
38          gender = 1
39      else:
40          gender = 0
41      if (married=='married'):
42          married=1
43      else:
44          married=0
45      if (proper=='rural'):
46          proper=0
47      elif (proper=='semiurban'):
48          proper=1
49      else:
50          proper=2
51      if (education=='graduate'):
52          education=0
53      else:
54          education=1
55      try:
```

Failed (exit code: 2) (1106 ms)

```
main.py:33: error: expected ':'  [syntax]
Found 1 error in 1 file (errors prevented further checking)
```

Here error showing that there is a syntax error due to that further checking is prevented.

6.

```
5
6
7  #Iterate the file line by line
8
9  #f=open("story2.txt",'r')
10 [print(i,end="") for i in f]
11 f.close()
12
13
14 #Read file and storing as list of lines
15 file = open("story2.txt","r")
16
17 data_list = file.readlines()
18 file.close()
19 print(data_list)
20
21 #mode function in file :
22 file = open("story2.txt","r")
23
24 if file.mode == 'r':
25     print("File is open as read mode")
26 elif file.mode == 'w':
27     print("File is open as write mode")
28 elif file.mode == 'a+':
29     print("Fil is open as append mode")
30
31
32 #try case on file opening
33
```

Failed (exit code: 1) (3288 ms)

```
main.py:10: error: Cannot determine type of "f"  [has-type]
main.py:11: error: Cannot determine type of "f"  [has-type]
main.py:11: error: Name "f" is used before definition  [used-before-def]
main.py:52: error: Name "seq" is not defined  [name-defined]
Found 4 errors in 1 file (checked 1 source file)
```

Here error shows that cannot determine the type of “f” because f didn’t linked to any file descriptor.
Another error is f is used before the definition of the “f”.
And also we haven’t defined the “seq” but used in the code so that it gives and error.